UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,602	12/09/2003	Paul J. Gyugyi	NVDA P000860	4738

26291 7590 12/23/2008

PATTERSON & SHERIDAN L.L.P. NJ Office
595 SHREWSBURY AVE, STE 100
FIRST FLOOR
SHREWSBURY, NJ 07702

EXAMINER	
MAGLO, EMMANUEL K	
ART UNIT	PAPER NUMBER
2419	

MAIL DATE	DELIVERY MODE
12/23/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/731,602	GYUGYI ET AL.	
	Examiner	Art Unit	
	EMMANUEL MAGLO	2419	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 October 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-8,10-22 and 24-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-8,10-22 and 24-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

This Office Action is in response to the amendment filed on 09/04/2008 and the supplemental amendment filed on 10/30/2008 (after interview dated 10/29/2008).

Claims 1, 5, 8, 11, 13, 14, 15, 20, 21, 22, and 29 have been amended.

Claims 3, 9 and 23 have been canceled.

Claims 1, 2, 4-8, 10-22, and 24-31 are pending in the application.

Response to Arguments

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection necessitated by Applicant's amendment to claims.

Claim Rejections - 35 USC § 102

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 4-8, 10-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Elzur et al. (US 7,346, 701 B2), hereinafter referred to as Elzur.

Regarding claim 1, Elzur describes a method of using *a delegated connection table*, comprising:

selecting, by a transmission control protocol (TCP) stack, a connection, for processing by an offload unit, (fig. 3, referring to the TCP offload system, col. 11 lines 6-

35: a connection is selected for processing a packet or frame by the TCP enabled Ethernet controller (TEEC), offload unit. Furthermore note fig. 11 step 120, and col. 12 lines 46-47 and 60-64),

initializing an entry with connection state corresponding to a connection selected by a transmission control protocol (TCP) stack for processing by an offload unit (col. 15 lines 14-25: "the mapping may be initialized when a buffer is assigned to an offloaded connection.),

determining that a first frame is received on the connection selected by the TCP stack for processing by the offload unit, (As previously noted, col. 12 lines 46-47 and 60-64, processing follows end-to-end connection; for this reason a first packet is received, fig. 11 step 170, at the connection selected in step 120),

updating the entry when the first frame is received for the connection, (col. 11 lines 31-33), *wherein a sequence number is stored in the entry, the sequence number representing a next expected sequence number for the connection,* (col. 15 lines 10-25: via a page table structure, fig. 9, the TEEC may read the buffer information and may construct a mapping between TCP sequence number of the incoming packets and the host buffers: this correspond to the TCP sequence number of expected packet because "a particular TCP sequence number may be mapped, for example, to the start of a specific buffer or into some offset into a specific buffer. The mapping may be initialized when a buffer is assigned to an offloaded connection. As packets are received, they are compared to the buffer mapping information"),

parsing the first frame to extract TCP payload data (fig. 11 step 110, in addition col. 8 lines 21-29, col. 11 lines 53-60, col. 12 lines 39-44)

uploading TCP payload data to a memory (col. 14 lines 65-67 and col. 15 lines 1-9)

reading the entry when a second frame is transmitted for the connection (col. 15 lines 14-17).

Regarding claims 2 and 4, Elzur describes *updating the entry by copying portion of the second frame into a portion of the entry in the delegate connection when the second frame is transmitted, uploading payload data to a location specified in the entry within a memory space of the memory that is allocated to an application program* (col. 15 lines 1-7).

Regarding claims 5 and 11, Elzur describes *notifying the TCP stack when the TCP payload data of the first frame received is updated by the offloaded unit to at least one of the legacy buffer,* (fig. 3, the data may be moved to a host buffer) *that is in a portion of the memory that is allocated to a driver configured to interface between the offload unit and an application program,* (with reference to fig. 3 and fig. 11step 150, the header/data boundaries may be determined. The results of the processing in the control path may determine the boundaries between the packet portions that are treated as headers and the packet portions that are treated as data or payload. In addition, fig. 9 illustrates an embodiment of a system that may map and copy data of an incoming packet to a host resident buffer or buffers),

Regarding claim 6, Elzur describes uploading *to a legacy buffer the TCP payload when the TCP payload data of the first frame that is in the portion of the memory that is allocated to the driver configured to interface between the offload unit and an application program* (see step 130 fig. 11 and col. 14 lines 10-19).

Regarding claim 7, Elzur describes receiving a *third frame that does not correspond to another entry in the delegated connection table* (for the frame is received from the Ethernet 60, fig. 8B and col. 12 lines 6-8).

Regarding claim 8, Elzur describes

determining that the first frame and the second frame are out-of-sequence based on a comparison of the sequence number stored in the entry with a sequence number in the second frame, (col. 15 lines 10-25: note the stored sequence number of the receive entry in the selected connection is compared to that of the next entry-; as packets are received, they are compared to the buffer mapping information-, it is thus determined whether or not the first frame and the second frame are out-of-sequence. Note this determination is made because the sequence number is used to concatenate received packets (first frame, second frame…) of an associated flow), and

storing a flag in the entry to indicate that synchronization is requested for the connection, (note fig. 4 a flag field included in the entry for the purpose of indicating synchronization),

Regarding claim 10, Elzur describes *uploading the payload data of the first frame to at least one legacy buffer that is in a first portion of the memory that is allocated to a driver*

configured to interface between the offload unit and an application program when a user buffer in a second portion of the memory that is allocated to the application program is not available (fig. 3)..

Regarding claim 11, Elzur further describes notifying the application program to complete processing of the first second frame.

Regarding claim 12, Elzur describes uploading any subsequent frames received for the connection, to one or more additional legacy buffers until resynchronization is signaled by the TCP stack (col. lines 4-9).

Regarding claims 13 and 14, Elzur describes *resynchronization is accomplished by sending an acknowledge for the second frame, and invalidating any buffer descriptors for portions of the memory that are available for storing data received on the connection*, (see fig. 10 acknowledgment blocks 250 causes availability of TCP acknowledges for the purpose of resynchronization due to data retransmission, col. 17 lines 64-65).

Regarding claim 14, Elzur describes *the method of claim 12, further comprising:*

determining that the sequence number in the second frame is more advanced than the sequence number stored in the entry, (note fig. 11 step 120, col. 12 lines 45-56: the packets are associated with end-to-end TCP connection; in addition because they belong to the same flow, col. 15 lines 10-25, and because the sequence number indicates the order of a particular packet, a sequence number in the second frame is more advanced than the sequence number stored in the entry: the second frame is

received after the firs),

and

sending an acknowledge for the first frame, (fig. 10 acknowledgment blocks 250 causes availability of TCP acknowledges for the purpose of resynchronization due to data retransmission, col. 17 lines 64-65)*; and*

invalidating any buffer descriptors for portions of the memory that are available for storing data received on the connection. (col. 12 lines 36-39: In step 140, the TCP/IP headers may be processed. Some IP and TCP frame validity (or invalidity) checks are performed),

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 15-22 and 24-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elzur et al. (US 7,346, 701 B2), hereinafter referred to as Elzur in view of Odenwald, Jr. (US 6310884 B1) hereinafter referred to as Odenwald.

Regarding claims15 and 16, Elzur describes *reading a connection match portion of the delegated connection table*, (refer to table fig. 9, the connections selected such that they are mapped to one or more storages), *wherein the connection match portion of the delegated connection table stores delegated connections that are selected, by a transmission control protocol (TCP) stack, for processing by an offload unit that includes the delegated connection table*; (col. 12 lines 55-68 and col. 13 lines 1-3: "as a result of the frame parsing in step 110, the 5 tuple may be completely extracted and may be available inside the PID_C. Association hardware may compare the received 5 tuple with a list of 5 tuples stored in the TEEC. The TEEC may maintain a list of tuples representing, for example, previously handled off-loaded connections or off-loaded connections being managed by the TEEC. The memory resources used for storing the association information may be costly for on-chip and off-chip options. Therefore, it is possible that not all of the association information may be housed on chip. A cache may be used to store the most active connections on chip. If a match is found, then the TEEC may be managing the particular TCP/IP connection with the matching 5 tuple

determining the received frame corresponds to an entry in the connection match portion of the delegate connection table (col. 13 lines 1-3)

reading a connection data portion of the delegate connection table that stores an expected sequence number (col. 15 lines 40-43)

an acknowledgment (ACK) number ((fig. 10 acknowledgment blocks 250 causes availability of TCP acknowledges for the purpose of resynchronization due to data retransmission, col. 17 lines 64-65)

timestamp data (fig. 10, timer 220 comprising TCP state code transmit and retransmit timers, col. 17 lines 35-39)

parsing the received frame to produce payload data (fig. 11 step 110)

Elzur describes the claimed invention except explicitly *a count of unACKnowledged frames in the entry*. Odenwald in the same field of endeavor teaches a Data transfer method containing a count of frame received SEQ_CNT (fig. 9). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to implement the frame count taught by Odenwald as a count of unACKnowledged frames. The benefit is that such frames will be used to determine the length of the received buffer.

Regarding claim 17, 18, and 19, Elzur describes

reading a connection buffer portion of the delegated connection table to obtain user buffer information including a user buffer address and a corresponding user buffer length of a user buffer that is stored in a portion of memory allocated to an application program, and

requesting user buffer when the user buffer information indicates the user buffer requesting a user buffer by setting a request buffer flag in the connection buffer portion of the delegated connection table (see fig.9 and col. 15 lines 1-9),

Regarding claims 20, Elzur describes

determining a receive buffer has reached a high water mark, (col. 16 lines 17-68 and col. 17 lines 1-26 give an indication of buffer reaching it max capacity –an indication that it has reached a high water mark), and

uploading the payload data to a legacy buffer that is in a portion of the memory that is allocated to a driver configured to interface between the application program and the offload unit including the delegated connection table (See fig. 3 and col.11 lines 25-33),

Regarding claim 21, Elzur describes

determining a buffer request timer has expired, (fig. 10, col. 17 lines 34-45: "the TEEC may comprise a timer 220, the timer 220 may comprise, for example, TCP state code transmit and retransmit timers" in case a *request timer has expired*), *and*

uploading the payload data to a legacy buffer that is in a portion of the memory that is allocated to a driver configured to interface between the application program and the offload unit including the delegated connection table, (col. 14 lines 65-67 and col. 15 lines 1-9),

Regarding claim 22, Elzur *describes*

a first storage resource configured to store user buffer information for delegated connections including a user buffer length and a user buffer address corresponding to a portion of memory that is allocated to an application program

a second storage resource configured to store delegated connection state information for the delegated connections including an expected sequence number, an

acknowledgment (ACK) number, timestamp data, and a count of unACKnowledged frames (fig. 2 element 270 comprising receive buffer 290 and transmit buffer 280, and user buffer length and buffer address, fig. 9).

In regards to *an expected sequence number, an acknowledgment (ACK) number, timestamp data, and a count of unACKnowledged frames* (see discussion of claim 15), and

a third storage resource, (fig. 8A-B element 35), configured to store delegated connection identification information for the delegated connections including a destination IP address, a source IP address, a source transmission control protocol (TCP) port, and a destination TCP port, wherein the delegated connections are selected, by a transmission control protocol (TCP) stack, for processing by an offload unit that includes the delegated connection table. FIG. 8A illustrates and exemplary chip set in which a TEEC is a single chip or part of a single chip. The TEEC 75 may fetch tuple and/or context information from a tuple and/or context buffer located in the host memory 30. The TEEC 75 may also fetch tuple and/or context information from a dedicated tuple and/or context memory 35 which is coupled to the chip set 55),

Regarding claim 24, Elzur *describes processing unit configured to write to the first storage resource* (fig. 2 element 210),

Regarding claim 25, Elzur *describes the delegated connection table further*

comprising a transmit engine configured to access the second storage resource and perform outbound frame processing, (fig. 3, TEEC 270 is adapted to transmit into a portion of host memory incoming TCP packet),

Regarding claim 26, Elzur *describes the delegated connection table further*

comprising a receive engine configured to access the second storage resource and parse incoming frames and determine whether or not the incoming frames are valid, (fig. 3, TEEC 270 is adapted to read into a portion of host memory incoming TCP packet),

Regarding claim 27, Elzur *describes the delegated connection table, wherein the receive engine is configured to read the first storage resource,* (fig. 3, TEEC 270 is adapted *to* read into a portion of host memory incoming TCP packet),

Regarding claim 28, Elzur *describes the delegated connection, wherein the receive engine is configured to read the third storage resource,* (fig. 8A-B),

Regarding claim 29, Elzur *describes the updating of the entry when the first frame is received for the connection includes clearing an unACKnowledged count, updating an acknowledgment (ACK) number with a last ACKnowledged number, and updating the sequence number with an incremental sequence number that is stored in the entry,* (fig. 10 acknowledgment blocks 250 causes availability of TCP acknowledges for the purpose of resynchronization due to data retransmission, col. 17 lines 64-65),

Regarding claim 30, Elzur *describes the method of claim 16, wherein the modifying of the portion of the connection state data includes clearing an unACKnowledged count, updating the acknowledgment (ACK) number with a last ACKnowledged number, and updating the expected sequence number with an incremental sequence number,* (fig. 10 acknowledgment blocks 250 causes availability of TCP acknowledges for the purpose of resynchronization due to data retransmission, col. 17 lines 64-65 this is based on the sequence number, because of end-to-end flow for the connection),

Regarding claim 31, Elzur *describes the delegated connection table of claim 22, wherein the delegated connections specified by the delegated connection table are a subset of active connections stored in a connection table within a system memory,* (table fig. 9: remark, the TCP segmentation tracks only a minimal subset of information related to corresponding TCP data).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EMMANUEL MAGLO whose telephone number is (571)270-1854. The examiner can normally be reached on Monday - Friday 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571)272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Emmanuel Maglo
Patent Examiner
December 23, 2008

/Hassan Kizou/
Supervisory Patent Examiner, Art Unit 2419